

WHAT IS CLAIMED IS:

1 1. A system for deskewing serial data received at a plurality of independent
2 devices, each device coupled to receive a single serial XAUI lane, with a Master device
3 coupled to a selected XAUI lane and slave devices coupled to remaining XAUI lanes, the
4 system comprising:

5 a two-wire bus, having a first wire and a second wire;

6 an alignment character detecting unit included in each device, with the alignment
7 character detecting unit for indicating when an alignment character is detected in serial data
8 received at the device;

9 an Align_Character signal assertion unit, included in the Master device, and coupled
10 to the alignment character detecting unit and to the first wire, for asserting the
11 Align_Character signal when an alignment character is detected in serial data received from
12 the selected XAUI lane; and

13 a deskew unit in each slave device, coupled to the first wire, the second wire, and to
14 the alignment character detecting unit, for decoding the Align_Char signal to determine
15 whether its received data is skewed relative to data received at the master, and if the data is
16 skewed, slipping its datapath to deskew the data and asserting an Error_Ind signal on the
17 second wire.
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1 2. The system of claim 1 wherein each device runs on an internal device clock
2 at twice the speed of the bus clock and with the internal device clock and bus clock being in
3 phase and with a bus clock cycle comprising a first phase aligned with a first device clock
4 cycle and a second phase aligned with a second device clock cycle, the system further
5 comprising:

6 an Align_Character signal encoder for asserting the Align_Character signal for
7 one bus cycle if the alignment character is detected during the first device clock cycle and for
8 asserting the Align_Character signal for two bus cycles if the alignment character is detected
9 during the second device clock cycle.

1 3. A system for deskewing serial data received at a plurality of independent
2 devices, each device for being coupled to receive a single serial XAUI lane, each device
3 including:

4 an Align_Char port and an Error_Ind port;

an alignment character detecting unit, with the alignment character detecting unit for indicating when an alignment character is detected in serial data received at the device;
an Align_Character signal assertion unit, coupled to the alignment character detecting unit and to the Align_Char output port, for asserting the Align_Character signal at the Align_Character port when an alignment character is detected in serial data received from the single XAUI lane and the Align_Character is output enabled;
a deskew unit, coupled to the Align_Character port, the Error_Ind port, and to the alignment character detecting unit, for decoding an Align_Char signal received at the Align_Character port to determine whether its received data is skewed relative to data received at a device asserting the Align_Character signal, and if the data is skewed, slipping its datapath to deskew the data and asserting an Error_Ind signal at the Error_Ind port.

4. A method for deskewing serial data received at a plurality of independent devices, each device for being coupled to receive a single serial XAUI lane, the method including the acts of:

at a Master device coupled to the selected XAUI lane:

asserting an Align_Char signal during a first bus clock cycle when the alignment character is detected;

at a Slave device coupled to another XAUI lane:

receiving the Align_Char signal during the first bus clock signal;

determining whether its received data is skewed relative to the data

received at the Master device;

if the data is skewed:

slipping its datapath to align its received data with master; and

asserting an Error_Ind signal.

5. A system for deskewing serial data received at a plurality of independent devices, each device for being coupled to receive a single serial XAUI lane, the system comprising:

at a Master device coupled to the selected XAUI lane:

means for asserting an Align_Char signal during a first bus clock cycle when the alignment character is detected;

at a Slave device coupled to another XAUI lane:

8 means for receiving the Align_Char signal during the first bus
9 clock signal;

10 means for determining whether its received data is skewed
11 relative to the data received at the Master device;

12 means for slipping its datapath to align its received data with
13 master if the data is skewed; and

14 means for asserting an Error_Ind signal if the data is skewed.

1 6. A method for deskewing serial data received at a plurality of independent
2 devices, each device for being coupled to receive a single serial XAUI lane, the method
3 including the acts, performed at a device, of:

4 asserting an Align_Char signal during a first bus clock cycle when the
5 alignment character is detected;

6 receiving and decoding an Align_Char signal received at the Align_Character
7 port;

8 determining whether its received data is skewed relative to data received at a
9 device asserting the Align_Character signal;

10 if the data is skewed:

11 slipping its datapath to align its received data with master; and

12 asserting an Error_Ind signal.

1 7. The method of claim 6, with a device including a deskew state machine, the
2 method further comprising the acts of:

3 if an Error_Ind signal is received:

4 resetting the deskew state machine so that all deskew state machines on each
5 device are synchronized.

1 8. A system for deskewing serial data received at a plurality of independent
2 devices, each device for being coupled to receive a single serial XAUI lane and with each
3 device including an Align_Char port and an Error_Ind port, with a device comprising

4 means for asserting an Align_Char signal when the alignment character is
5 detected;

6 means for receiving and decoding an Align_Char signal received at the
7 Align_Character port;

8 means for determining whether its received data is skewed relative to data
9 received at a device asserting the Align_Character signal;
10 means for slipping its datapath to align its received data with master if
11 the data is skewed; and
12 means for asserting an Error_Ind signal at the Error_Ind port if the data is
13 skewed.

1 9. The system of claim 8, with a device including a deskew state machine, the
2 device further comprising:
3 means for resetting the deskew state machine so that all deskew state machines
4 on each device are synchronized if an Error_Ind signal is received the Error_Ind port.